

**[AN] INFORMATION RETRIEVAL APPARATUS AND  
METHOD USING REGIONAL INFORMATION**



**BACKGROUND OF THE INVENTION**

1. Field of the Invention

5   **[0001]**   The present invention relates to an information retrieval technique, and [it] particularly relates to an information retrieval apparatus and method [that receive an input of a place-name to limit a region] and can apply to limited geographical regions to be searched [when a user searches information]. It also relates to an information retrieval technique by which [life-related] personal,  
10   lifestyle information [with regionality is] related to specific regions can be searched and retrieved.

2. Description of the Related Art

**[0002]**   [Although WWW (] The World Wide Web] is one of applications in the Internet, WWW] is becoming an indispensable means for providing and  
15   retrieving information in the Internet. With an explosive growth of Web sites, the amount of offered information is increasing rapidly, and it [becomes an important issue in utilizing the WWW how] is becoming difficult to find really necessary information in a short time.

**[0003]**   Recently, a mechanism using a search robot is [commonly applied to]  
20   used with portal Web sites for information retrieval. The robot visits many Web sites periodically and automatically extracts key words from Web pages [in the

Web sites] so that users can efficiently search the Web sites [or the Web pages in the future] for information using selected key words.

[0004] Generally the robot chooses [the] specific words [in the] from Web pages as the key words to be [registered] used. [Therefore, the inventors of the present invention recognized that it has not been realized to] The specificity of this key word selection does not allow ambiguity [in a good sense in information retrieval] in key word usage, which [is inevitable in searching] can unnecessarily and perhaps unknowingly fail to retrieve valuable information of a related nature.

10 [0005] For instance, when a user searches for a wine shop in Shinjuku, "Shinjuku" and "wine" may be used for search terms, and as a logical multiplication of these terms, [that is,] an AND condition is set as [a] the boolean query expression. In this case, [even] if a wine shop exists in nearby Shibuya, the shop [is] will not normally be found in the search. However, the user may  
15 not mind visiting [the] a shop in Shibuya, considering there is a relatively short distance between Shinjuku and Shibuya. Such ambiguous information does not meet the [present query] specific boolean expression and is [neglected] overlooked in the search.

[0006] As another example, when a user searches for a Chinese restaurant  
20 in Yokohama, "Yokohama" and "Chinese restaurant" may be used as the search terms, and an AND condition of these terms is set as a query

expression. In this case, [even] if a restaurant has a Web page saying, "Our restaurant is the most popular Chinese restaurant in China Town", the restaurant is not found in the search [when] because "Yokohama" is not included in the description. It is possible that the user means China Town rather than Yokohama. This kind of problem is not inherent in the search robot mechanism, but the same [issue will possibly] result could occur in a search engine site where an [administrator of the site] operator registers key words by hand.

[0007] [Furthermore, information] Information services, such as [a] search [engine] engines and the Yellow Pages, are in wide use in the Internet; and, Web pages of a company, a store, or a public facility can be browsed by a personal computer at home or [a] by mobile phone. [The] On the Internet, emphasis [of WWW] has been made to put on [the aspect that] worldwide information which can be browsed by a personal computer[, but]; however, recently, [information provision has been attempted from a viewpoint of regionality or locality] interest had developed in finding only local or regional information. For instance, a local supermarket [can offers] may offer information about today's [bargain] sale items to local residents via the Internet. Such a local information service may increase in the future. [A mobile phone] Mobile phones and [a PDA, Personal Digital Assistant,] PDA's are in common use and it can be expected that regional information, such as a clinic, a school, or a post office, might be stored and [used] accessed electronically [in such] by a portable terminal.

[0008] Although a user can store [life-related] his lifestyle information [with regionality searched] of a local nature in a personal computer, a mobile phone, or a PDA, if the user moves [and] his/her residence [changes], the stored [life-related] lifestyle information [becomes] may become meaningless. In addition, 5 when the user travels or goes on business, the stored local information becomes useless. It is a time-consuming job for the user to search again similar [life-related] lifestyle information when his/her residence changes. It is also troublesome for the user to search local information fit to his/her preference or needs[,] when he/she travels on vacation or on business [and] or his/her 10 living place changes [temporarily].

#### SUMMARY OF THE INVENTION

[0009] [The present invention has been made in view of the above-mentioned problems recognized by the inventors, and an] An object [thereof] of the invention is to provide an information retrieval technology by which ambiguity in 15 information retrieval can be [realized] utilized, particularly [in respect of] regarding a [place-name] place name. Another object of the present invention is to provide an information retrieval technology by which [life-related] regional lifestyle information [with regionality] can be obtained effectively.

[0010] According to one aspect of the present invention, an information 20 retrieval apparatus [is provided. The apparatus] includes an [inputting] input unit which receives [an input of] a key word [straightforwardly] specifically

describing information to be searched [by a user,] and a [place-name] place name to apply a regional restriction to the searching, a [selecting] selection unit which selects a [place-name of a region] regional name that is judged to be within a [reachable area from a region indicated by the inputted] reasonable distance from the [place-name] place name on the basis of a predefined [judgment criterion] criteria, a setting unit which sets a logical [multiplication or logical] AND [of a logical addition] or a logical OR [of] in the [inputted place-name] place name and the selected [place-name] regional area, and the key word, all as [a] the query expression, and a [searching] search unit which

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10 searches the [information by] database using the query expression. The word "region" may [be replaced by "] mean a place["], locality, or geographic ["]area["].

[0011] Although the [place-name] regional name that is used for searching is also a key word in a broad sense, [a key word] in this specification, it refers to a [straightforward] specific expression or word describing [the] a broader concept

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corresponding to the information to be searched and it differs from the [place-name] place name. The [place-name] place name is a search term as well as the key word.

[0012] In this [configuration] system, when a user searches for information, he/she enters a key word and a [place-name via the inputting unit] place name.

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Next, the [selecting] selection unit selects a [place-name of a region] regional name that is judged to be within a [reachable] reasonably accessible area on the basis of a predefined [judgment criterion] criteria. The judgment criterion is]

criteria may be, for instance, whether it is within 20 minutes [by rail in consideration for a transfer means] of the user by rail, by foot, or by other transit means. [The transfer means may include "on foot" as well as a means of transportation.]

- 5    **[0013]**    Another example of the judgment [criterion is] criteria may be whether it is within a [10 kilometers in a straight line] 10-kilometer radius. In order to [judge on this criterion] make this judgment, the apparatus may have a table which stores a [place-name associated with absolute] place name and location information [of] for a region indicated by the [place-name] place name. The
- 10    [selecting] selection unit may choose from said table a [place-name of] place name in a region from which the [region indicated by the inputted place-name] place name is [far] within a predefined distance[, ] by using the [absolute] location [information] table. The [absolute] location [information is] table may be, for example, the latitude and longitude of the [region] indicated [by the
- 15    place-name] place name. Since the region may stretch to some extent, a standard point to define the location may be used, for instance [a] the center of the region.

- [0014]**    According to another aspect of the present invention, an information retrieval apparatus [is also provided. The apparatus includes] would include an
- 20    [inputting] input unit which receives a search term [inputted by] from a user [for searching information], an [extracting] extraction unit which extracts a [place-name] place name from the [inputted] search term, a [selecting] selection unit

which selects a [place-name of a region] regional name that is judged to be within a [reachable] reasonable area [from a] of the region [indicated by the extracted place-name] on the basis of a predefined [judgment criterion] criteria, a setting unit which sets a query expression, including a logical addition of the  
5 extracted [place-name] place name and the selected [place-name] place name, and a [searching] search unit which searches the [information] database by using the query expression.

[0015] The [inputting] input unit may [receive] also provide personal information of the user, and the [selecting] selection unit may select the [place-  
10 name] place name after defining or modifying the [reachable] regional area using the personal information. For instance, [the] personal information [relates] may relate to a range of activities, a behavioral pattern, or [an area] a variety of activities or interests of the user. If the user is a old person or a child, the [range of activities may] geographical scope could be restricted. In [this] such  
15 case, the [reachable] reasonable area [may] could be narrowed or restricted to [the] an area along the route of a train or a bus the user usually takes.

[0016] According to [yet] another aspect of the present invention, an information retrieval method [is provided. The method] includes obtaining information related to [a] the location of a user, extracting an item of [life-related]  
20 regional lifestyle information [with regionality at] within the location [from information retrieved by the user], obtaining information related to a destination

of the user, and searching [life-related] the regional lifestyle information [with regionality] at the destination [by] using the extracted [item] information.

[0017] The user location and the destination [are] include where a user lives, stays or commonly goes [in general] and includes [the] work place [of work], [a  
5 new] residence, and the destination [in] of travel on business or on vacation.

[0018] According to still another aspect of the present invention, an information retrieval method [is also provided. The method] includes storing an item of [life-related] regional lifestyle information [with regionality], obtaining information related to a destination of a user, and searching [life-related]  
10 regional lifestyle information [with regionality] at the destination by using the stored item without receiving an input of the item from the user.

[0019] According to still another aspect of the present invention, an information retrieval method [is also provided. The method] includes storing [a] personal [attribute] attributes of a user, obtaining information related to a  
15 destination of the user, and searching [life-related] regional lifestyle information [with regionality] at the destination by using the personal [attribute] attributes without receiving a search item from the user. The personal attribute may be an objective attribute, such as age, sex, address, profession, or may be [an] a subjective attribute, such as [preference] preferences or hobbies.

20 [0020] According to still another aspect of the present invention, an information retrieval apparatus [is provided. The apparatus] includes a [life-



related] lifestyle information [storing] storage unit [which stores an item of life-related information with regionality] for each user, a destination [obtaining] unit which obtains information related to a destination of a user, a [searching] search unit which searches [life-related] for regional lifestyle information [with

5 regionality] at the destination by using the stored item, and a [transmitting] unit which transmits the [searched life-related] lifestyle information to a terminal of the user.

[0021] According to still another aspect of the present invention, a terminal [is provided. The terminal] includes a search history [storing] storage unit which

10 stores a history [about information] of data searched by a user, a location [obtaining] unit which obtains information related to a location of the user, an [extracting] extraction unit which extracts an item of [life-related] regional lifestyle information [with regionality] at the location based on the history, and a communication unit which transmits information related to a destination of the

15 user and the extracted item to a server, and receives [life-related] regional lifestyle information [with regionality at] of the destination that is searched by the server.

[0022] [Moreover, any arbitrary combination of the above-mentioned structural components in the present invention is still effective as an

20 embodiment when applied as a method, a system, a server, a terminal, and a computer program, and so forth.]

**[0023]** This summary of the invention does not necessarily describe all necessary features so that the invention may also be a sub-combination of these described features.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 **[0024]** Fig. 1 is a block diagram of an information retrieval apparatus according to [an] one embodiment of this invention.

**[0025]** Fig. 2 [is an] shows the internal data structure of a personal information table.

**[0026]** Fig. 3 [is one] shows the internal data structure of a [place-name]  
10 place name table.

**[0027]** Fig. 4 is another internal data structure of a [place-name] place name table.

**[0028]** Fig. 5 [is] shows yet another internal data structure of a [place-name] place name table.

15 **[0029]** Fig. 6 is a block diagram of an information retrieval system according to [the] a second embodiment.

[0030] Fig. 7 is a block diagram of a user terminal and a [searching] search server.

[0031] Fig. 8 shows an example of a screen display of a user terminal.

[0032] Fig. 9 shows a [life] data file that stores items of [life-related] a user's  
5 lifestyle information [of a user].

[0033] Fig. 10 shows a search result of [life-related] lifestyle information at a new address.

[0034] Fig. 11 is a flow chart of [an] the information retrieval procedure [by] of a [searching] search server.

10 [0035] Fig. 12 is a block diagram of a user terminal and a [searching] search server according to [the] a third embodiment.

[0036] Fig. 13 shows an example of [life-related] lifestyle information displayed [in] on a user terminal.

#### DETAILED DESCRIPTION OF THE INVENTION

15 [0037] The invention will now be described on the basis of the preferred embodiments, which do not intend to limit the scope of the present invention,

but exemplify the invention. All of the features and the combinations thereof described in the embodiment are not necessarily essential to the invention.

[0038] [The first embodiment of the present invention is explained.] Fig. 1 shows a block diagram of an information retrieval apparatus 10 according to  
5 [the] a first embodiment of the present invention. The structure of the apparatus 10 may be implemented with a CPU, memory and a program with a regional information [retrieving] retrieval function loaded in the memory. In the figure, [however,] the blocks are not divided in terms of hardware and/or software component, but in terms of function. [The] Those skilled in the art can therefore  
10 understand that [the] various combinations of hardware and software components can achieve [the function of these blocks] these functions. In particular, the software components in [the] apparatus 10 are implemented, for example, in [such] a manner such that the regional information [retrieving] retrieval function that characterizes the present invention is embedded into a  
15 main function for Web browsing. Therefore, it is herein assumed that the information retrieval is performed [using WWW (World Wide Web) in such a configuration] by accessing the Web.

[0039] [An input] Input unit 12 obtains data [inputted by] from a user using a keyboard, [a] mouse, or other external [equipments, here a] equipment. Here,  
20 the data would be search [term,] terms, such as a user's personal information[, and so on]. The search term is forwarded to a [place-name extracting] place

name extraction unit 14, and the personal information is stored into a personal information table 24.

[0040] Fig. 2 shows the internal data structure of the personal information table 24. The personal information table 24 includes a user field 240, an age field 242, a means of usual transportation field 244, and a nearest station field 246. For [instance] example, it is [recognized] assumed that [the] user A is 26 years old and usually [transfers] travels from Nakano station by train. [The user] Users B and D are relatively old and [the] user D [mainly transfers] usually travels by car. Such personal information is utilized for defining a [reachable] reasonable search zone or area for each user, as described later.

[0041] Now assume that the input data is not [spaced word by word] specific search words but given in a statement, "I want to buy good wine at Shinjuku." The [place-name extracting] place name extraction unit 14 decomposes into morphemes, and extracts the nouns, "Shinjuku" and "wine" at least, and then utilizes them as the search terms. Next, the [place-name extracting] place name extraction unit 14 extracts a [place-name] place name from the search terms. As an example of the way of extracting the [place-name] place name, the [extracting] extraction unit 14 refers to a [place-name] place name table 26 that stores [place-name] place name related information, and [extract] extracts a noun, here "Shinjuku," which corresponds to one of the [place-names] place names in the table. The extracted [place-name] place name "Shinjuku" is forwarded to a [place-name selecting] place name selection unit 16. The

[place-name selecting] place name selection unit 16 chooses from the [place-name] place name table 26 some [place-names] place names that are within a [pre-defined] predefined area around "Shinjuku", and then forwards them to a query setting unit 18.

5    **[0042]**    Fig. 3 shows an example of the internal data structure of the [place-name] place name table 26. A [place-name] place name field 260 and [an absolute] a location field 262 are provided in this example, and the latter is expressed in the form (Loi, Lai) (i=1, 2, J) which indicates longitude and latitude, respectively. In the place-name field 260, a sightseeing spot, such as "Tokyo  
10    Tower", the name of a structure, the name of [the] a natural place, such as "Mt. Fuji," are filled as well as administrative divisions, such as town, county, ward, city, [and] or prefecture. In the [absolute] location field 262, there are the standard [location] locations of each [place-name] place name, for example, a city hall or other administrative [agencies for the administrative division] office,  
15    and the longitude and latitude of [the] a central point or [the summit] for the natural place. In any [cases] case, a rough central point may be used. Any [geometrically defined] geographically unique [points] point may be adopted, for example, the center [of gravity] of a rectangle circumscribing the area indicated by the [place-name] place name.

20    **[0043]**    Since the [absolute] location of the region indicated by each of the [place-name] place name is obtained from the [place-name] place name table 26, the distance between the regions is determined. [The] A region within

6 kilometers is determined as the [reachable area] zone for the user at [an initial state] a starting point. Therefore, the [place-name selecting] place name selection unit 16 chooses the [place] places "Shibuya" and "Ikebukuro" as being within 6 kilometers from "Shinjuku".

- 5 **[0044]** The query setting unit 18 deals with the original [place-name] place name "[Sinjuku] Shinjuku", and the place [name] names "Shibuya" and "Ikebukuro" selected by the [place-name selecting] place name selection unit 16 as an acceptable [area] zone for [the] information retrieval, while utilizing the word "wine" for [searching] search information. Here, as an example, the query
- 10 expression is set as "(Shinjuku OR Shibuya OR Ikebukuro) AND wine", and forwarded to [a searching] search unit 20. The [searching] search unit 20 itself may be a search engine, or may have a control function for sending a search command to a search engine in a portal Web site. The [searching] search unit 20 may deal with a meta-search engine that exploits multiple search
- 15 engines at the same time. In this case, the system can save the user a lot of labor and avoid a biased search in a single search engine. In any case, Web sites and their Web pages are searched under the above query expression via a communication unit 22, and then some matched Web pages are obtained at a search result [obtaining] unit 28 via the communication unit 22, and the result is
- 20 displayed as a list in [a] display 30. If the number of the matched pages exceeds a predefined threshold [at] in the search result [obtaining] unit 28, the query setting unit 18 is notified and a new search term may be added. In the above-mentioned example, the terms "store", "sales", or "good quality" [may]

could be added. Thus, [the] in the example, a user can find a store that sells quality wine in Shibuya and Ikebukuro as well as Shinjuku.

[0045] As another way of [the place-name selecting unit 16] utilizing the personal information table 24, the [reachable area] search zone can be  
5 extended or narrowed according to the user's age. For instance, since [the] user B is old, it can be assumed that he/she normally does not [walk] walk/travel a long distance for shopping. Therefore, the information may be searched [under the] within a narrowed [reachable area] zone. [Furthermore, if] If it is taken into consideration that [the] user B [gets on] usually takes a bus from  
10 Shibuya, the [place-names] place names along the regular route of the bus may be added as OR conditions in the query expression. For this purpose, the [route maps] routes of trains and [busses] buses may be prepared and the information retrieval apparatus 10 may add [the] areas along the route [S for users who uses a certain route S] into [his/her] a user's normal [reachable area]  
15 search zone, or alternatively, choose [the place-names] place names along the route [S] as [the] selected [place-names] place names.

[0046] Although [the] user D is relatively old, but he/she [transfers] travels mainly by car, the [place-name] place names may be chosen [after] according to or including the areas along the main road [are] and added to his/her normal  
20 [reachable area] search zone. In this case, it is preferable that the starting or home address of [the] user D is obtained. Even if he/she [transfers] travels by car, there may be a high possibility that he/she should be within the region



around his/her [house] home, and therefore it is reasonable that the [reachable region] search zone should be defined [after] taking this point into consideration.

[0047] Fig. 4 shows another example of [the place-name] a place name table 26. In this example, the [place-name] place name table 26 stores a  
5 proximity relation between the regions indicated by the [place-names, or] place names, particularly an adjacent [relation] relationship. For example, some adjacent wards<sub>i</sub> such as "Shibuya, Nakano, Chiyoda<sub>i</sub>" are filled in [an] the adjacent [place-name] place name field 264 corresponding to the [place-name] place name "Shinjuku"[<sub>i</sub>]; and other adjacent wards<sub>i</sub> such as "Osaka, Nara,  
10 Hyogo<sub>i</sub>" are likewise filled corresponding to "Kyoto". The [place-name] place name table 26 further has a distance classification field 266. A value is [filled] placed in this field, and the bigger the value is, the larger the scale [or unit] of the regions in the adjacent [relation] relationship becomes[<sub>i</sub>]; that is, the larger the distance between [the] adjacent regions becomes. For instance, the  
15 distance classification is set to 0 for [the] adjacent towns within the same ward, 1 for [the] adjacent wards, and 2 for [the] adjacent prefectures. By using the distance classification, the [place-name selecting] place name selection unit 16 can select the [place-name] place name as follows[<sub>i</sub>]:

20           1. Select "0" as the distance classification for users who go on foot[<sub>i</sub>] so that only very closely adjoining towns are set as the [reachable area] search zone.

2. Select "0" or "1" as the distance classification for the aged, or [may] select "2" for users who [can transfer] travel by car like [the] user D.

3. Cancel the restriction on the distance for the areas along [the] a train route that users usually take.

5 [0048] Fig. 5 shows yet another example of [the place-name] a place name table 26. In this example, the [place-name] place name table 26 [stores] establishes an inclusive relation between [the] regions as indicated by the [place-name] place name. For instance, "Yokohama" in the [place-name] place name field 260 contains "China Town" and "Sakuragi Town" [in] as within an inclusive region [field] 268. Therefore, even if the user simply inputs "Yokohama" as the search term, it is not likely that ["Yokohama"-related regional information such as] "China Town" [should] would be missed. Of course, [the] a regional name, such as "Shinshu," may be used for the [place-name as well as] place name instead of towns [and] or cities. A noted structure, 10 a [natural place] landmark, a noted place or other region-related things can be adopted as the name of the inclusive region.

[0049] Some alterations are now explained. Although the [absolute] distance between regions is considered in Fig. 3, it may be replaced with [transfer] transit time between [the] regions. Namely, the travel time [duration of transferring] 20 from one region to another by rail, bus, or air may be considered as a distance between [the] regions[,] and used to define the [reachable area] search zone.

[0050] Moreover, an area code or a postal code may be used for creating [the place-name] a place name table [26]. Since these codes are numerical data, it is convenient in respect of system implementation.

[0051] Furthermore, although a town or a ward is a searchable unit in the  
5 above embodiment, a smaller region can be searched. In the above-mentioned embodiment, Shibuya-Ku, that is, the whole ward of Shibuya<sub>1</sub> may be searched under a query expression of "Shibuya" [and] yet it may [causes a] cause difficulty [knowing that] if the searched area is to be within walking distance. In such a case, the names of towns or places in the neighborhood, for instance,  
10 within some specified distance, may be obtained by using the latitude and longitude of a certain town in the ward of Shibuya or the Shibuya train station, and these names may be used as OR conditions in the query expression so that a more detailed search can be conducted. This function may be implemented in the [place-name selecting] place name selection unit 16, for  
15 instance.

[0052] Moreover, the search may be defined to be conducted [in the order] by orders of proximity. For instance, a physical distance, such as within 100 meters, 300 meters, 500 meters, and so on, may be used and the search [result] results may be shown in this order. Time duration<sub>1</sub> such as [with in] within 10 minutes, 20 minutes, and 30 minutes, or [transfer cost] train or bus fare, such as within 200 yen and 500 yen<sub>1</sub> may [be] also be used.  
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**[0053]** After the classification using these kinds of distance metrics is executed as a front-end process, information relating to the closest region may be [first] searched first, and after that, information relating to the next to [the] closest region may be searched. In this configuration, all that users do is to wait  
5 until the desired information is searched. Therefore, [the uses] users can avoid [a difficulty in] the problem of finding which [searched] result is [related to] in the closest region when the search [is conducted at one time and all] results are shown all at once. In addition, some existing search engines cannot process an OR search with many key words. In this configuration, [the] users can avoid  
10 this constraint in the search engines. This function may [be] also be implemented in the [place-name selecting] place name selection unit 16.

**[0054]** Moreover, although the information retrieval apparatus 10 is depicted as a client apparatus residing at the user [side] location, this apparatus may be configured as a server apparatus. For instance, the apparatus can be provided  
15 in a Web server that offers a search service to many clients, such as a home server [controlling electronic equipments at home,] or a server controlling [OA or FA (Factory Automation) equipments] a factory area. As such an example, if a Web server also serves as the information retrieval apparatus 10, the [inputting] input unit 12 of Fig. 1 will receive a request sent by the user via the Internet or  
20 other networks and perform a sequence of the processes described above in the server.

- [0055] As [a] still another configuration, the information retrieval apparatus 10 may be implemented as a client-server system. As an example, the [inputting] input unit 12 and the [place-name extracting] place name extraction unit 14 may be provided at the client [side] site, and the other function blocks may be
- 5 provided at the server [side]. As a matter of course, the function blocks in the configuration of Fig. 1 may be divided differently into [the] a client [side] site and [the] a server [side] site. The functional blocks can be appropriately divided when conditions, such as user convenience at the client [side, a] site, the server load, the amount of communication data, are taken into consideration.
- 10 [0056] [The second embodiment of the present invention is now explained.] Fig. 6 shows a block diagram of [the] an information retrieval system according to [this] the second embodiment of the present invention. A user terminal 2002, a [searching] search server 2004, and a Web server 2006 are connected via the Internet 2008. The user terminal 2002 accesses [to] the [searching] search
- 15 server 2004 and retrieves information offered by the Web server 2006. Fig. 7 is a block diagram of [the] user terminal 2002 and [the searching] search server 2004. [The user] User terminal 2002 may be a personal computer, a portable terminal, such as a [personal data assistant] Personal Digital Assistant, or a mobile phone. The [searching] search server 2004 is preferably
- 20 implemented using a normal computer and has a registration data [obtaining] reception unit 2020, a [life-related] lifestyle information [storing] storage unit 2022, a destination [obtaining] unit 2024, a [searching] search unit 2026,

and a [searching] search result [transmitting] transmission unit 2028[,] as its function blocks.

[0057] [An inputting] Input unit 2010 of the user terminal 2002 receives [the] items of [life-related] personal information and information related to a destination [inputted] input by a user. The registration data [obtaining] reception unit 2020 of the [searching] search server 2004 registers the [inputted] input items of the [life-related] personal information [to] in the [life-related] lifestyle information [storing] storage unit 2022. The items of the [life-related] personal information have [regionality at] a regional relationship to the location of the user. For instance, the item may be a generic name of a public facility, such as a hospital, a school or a post office, or may be a specific name of a frequented store or a favorite restaurant. The destination [obtaining] unit 2024 receives information related to the destination [inputted] input by the user and provides [the] that information to the [searching] search unit 2026. The information related to the destination is, for instance, an address, a postal code, or an area code of a telephone number. The [searching] search unit 2026 searches [life-related] for regional information [with regionality] at the destination by using the items of the [life-related] personal information stored in the [life-related] personal information [storing] storage unit 2022. For example, the [searching] search unit 2026 searches information related to a store at the destination that is the same as the frequented one at the present location. The [searching] search unit 2026 may also search information related to a school or a hospital that is located near the destination. The search result [transmitting] transmission

unit 2028 transmits the [searched life-related] retrived information to the user terminal 2002. The user terminal 2002 stores the received [life-related] information [to a] in storage unit [1014] 2014 and displays the information [in] on a display unit [1012] 2012.

5 **[0058]** Fig. 8 [explains] depicts a screen of [the] a user terminal 2002. A character or icon 2124 has an internal [life] data file 2126 storing the items of [the life-related] personal information of the user. The [life] data file 2126 is previously stored [beforehand] in the [life-related] information [storing] storage unit 2022 of the [searching] search server 2004. The [life] data file 2126 has,  
10 for instance, an address field 2100, a frequented store field 2102, and a hospital [filed] field 2104 as shown in Fig. 9. A postal code is stored in the address field 2100. Some specific names of stores visited frequently by the user are stored as the items in the frequented store field 2102. The hospital field 2104 stores some generic names, namely, dental and internal medicine in this  
15 example.

**[0059]** Referring to Fig. 8, when the user enters the postal code of the destination, to which the user is going to move, and clicks [a] go button 2122, [a] the character house icon 2128 that is an image of a site at the destination is displayed. When the user [moves] drags the character 2124 to the [character]  
20 house icon 2128 using a mouse, the character 2124 is registered [with] at the new address of the destination, and then [the life-related] personal information

at the new address is searched for each of the items stores in the [life] data file 2126.

[0060] Fig. 10 [explains] depicts a search result [of the life-related] for personal information at the new address. The first paragraph 2106 describes  
5 where a shop called "Fresh Hamburger" registered in the frequented store field 2102 in the [life] data file 2126 is located [at] near the new address. The user can refer to [the] a map of the area around the shop by clicking a "look at the map" button. The second paragraph 2107 is a message explaining that a shop called "ABC" registered in the frequented store field 2102 [is] was not  
10 found at the new address and the [searching] search server 2004 is now investigating what kind of store it is. In the third paragraph 2108, some clinics are recommended in respect to dental and internal medicine registered in the hospital field 2104. Thus, if the item registered in the [life] data file 2126 is a specific name or a proper noun, the [searching] search server 2004 tells the  
15 user where a store or a hospital corresponding to the specific name is located at the new address. If the item is given as a generic name, a recommendable store or hospital is presented to the user.

[0061] The fourth paragraph 2110 is a message introducing "Drugstore AAA" as a recommendable drugstore at the new address. This message is provided  
20 to the user after the [searching] search server 2004 judges "ABC" is a name of a drugstore by searching a Web page corresponding to "ABC". The message is an [html] HTML link as it is shown with an underline. By clicking on the



[message] link, the user can access [to] the Web [pages] site of "Drugstore AAA" and check whether the recommended store offers a [similar] service [with] similar to the frequented store at the old address. The fifth paragraph 2112 is a linked message inquiring of the user when the [searching] search server 2004 cannot know what kind of store "ABC" is. When the user clicks the [message] link, a screen is displayed for the user to enter information about "ABC".

**[0062]** Fig. 11 shows a flow chart [showing an] of the information retrieval procedure [by] of the [searching] search server 2004 having the above-mentioned configuration. The registration data [obtaining] reception unit 2020 registers the [life-related] information items obtained from the user in [the life-related] personal information [storing] storage unit 2022 (S2010). The destination [obtaining] unit [2024] 2012 obtains the information related to the destination from the user (S2012). The [searching] search unit 2026 checks whether each of the registered items is a specific name or not (S2014). The [life-related] personal information [storing] storage unit 2022 may have a list of generic names [about] related to the [life-related] personal information items, and [the searching] search unit 2026 may judge whether the registered item is a specific name or a generic name using the list. If the item is a specific name (Y of S2014), the [searching] search unit 2026 searches [the life-related] for information corresponding to the specific name at the destination (S2016). If the search is successful (Y of S2016), the [searched life-related] retrieved information is offered to the user (S2018). If the search is not successful (N of S2016), the [searching] search server 2004 inquires [of] the user about [the] a

generic name of the item (S2020). Instead of inquiring about the generic name, a generic name [guessed] selected by the [searching] search unit 2026 may be proposed to the user.

- [0063] If the item is not a specific name but a generic name (N of S2014) or  
5 when the user gives a generic name at [the] step S2020, the [searching] search unit 2026 searches the [life-related] information at the destination corresponding to the generic name (S2022). The [searching] search unit 2026 chooses recommendable information from the [searched life-related] retrieved information and proposes it to the user (S2024).
- 10 [0064] According to the [searching] search server 2004 in this embodiment, when a user changes his/her location, the user can be provided with [life-related] personal information at the new location in respect to the registered items. Particularly, if any of the registered items is given as a specific name, and there is no information corresponding to the specifically named item at the  
15 new location, the server inquires of the user whether a more general name should be [guessed for the item] used and then searches again for the [life-related] information. For the item given as a generic name, some [recommendable life-related] recommended information [at] from the new location will be presented. Therefore, [the] users can get [life-related] lifestyle  
20 information easily and automatically when they move, by just simply entering information [on] of the new location, and they can save a lot of [efforts for searching] searching effort.

[0065] [The third embodiment of the present invention is now explained.] The [searching] search server 2004 of [this] the third embodiment of the present invention is different in its configuration and behavior from [the one of] the second embodiment, [and the others] while some features remain the same.

5 Therefore only different points are described here. Fig. 12 shows a block diagram of the user terminal 2002 and the [searching] search server 2004. The [searching] search server 2004 includes a location [obtaining] unit 2034, a [life-related] personal information [extracting] unit 2032, a search history [storing] storage unit 2030, a [life-related] personal information [storing] storage unit 2022, a [searching] search unit 2026, a destination [obtaining] unit 2024, and a [searching] search result [transmitting] transmission unit 2028. The location [obtaining] unit 2034 obtains information related to the user location from [the] user terminal 2002 and outputs the information to the [life-related] personal information [extracting] unit 2032. The search history [storing] storage unit 2030 [stores] creates a history [about] file from information [on the Internet] searched by the user on the Internet. The [life-related] personal information [extracting] unit 2032 extracts [life-related] such information corresponding to the [user] user's location from the [stored] search history of the user, and registers [the] those items [of the life-related information] in the [life-related] personal information [storing] storage unit [22] 2022. For instance, information on a hospital, a beauty salon, or a drugstore [related to] at the present location of the user will be [extracted] recorded. In this case, the specific name of the frequented store, or a [subject] place of medical treatment, such as dental or

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internal medicine, will be registered as an item of the [life-related] lifestyle information.

[0066] The destination [obtaining] unit 2024 obtains from the user terminal 2002 information related to the destination [in] of intended moving, travel, and  
5 so on, and outputs the information to the [searching] search unit 2026. The [searching] search unit 2026 searches [life-related] for regional lifestyle information [with regionality] at the destination in respect to the items registered in the [life-related] personal information [storing] storage unit 2022. The search result [transmitting] transmission unit 2028 transmits the search [result] results  
10 to the user terminal 2002.

[0067] According to the [searching] search server 2004 in this embodiment, since the items of [life-related] lifestyle information of users are extracted from the [search] history file of the users [and] registered beforehand, even if [their] the location [change] changes, [they] a user can be provided with [life-related]  
15 lifestyle information [searched] at the new location in respect to the registered items, by just simply entering information [on] of the new location.

[0068] In the fourth embodiment of the present invention, the search history [storing] storage unit 2030, [life-related] lifestyle information [extracting] unit 2032, and the [life-related] personal information [storing] storage unit 2022  
20 of the [searching] search server 2004 of the third embodiment are implemented in the user terminal 2002. The user terminal 2002 stores the search history of

the user in [the search] history [storing] unit 2030, and extracts [the] items of [the life-related] lifestyle information and registers the items in the [life-related] personal information [storing] storage unit 2022. [The] When the user terminal 2002 receives an input of [the] a new destination from the user, [and] it 5 transmits the destination and the [life-related] lifestyle information items to the [searching] search server 2004 as a query expression so that [the] terminal 2002 can receive from the [searching] search server 2004 a search result of [life-related] lifestyle information at the new destination. The [life-related] personal information [storing] storage unit 2022 of the terminal 2002 10 may be configured as an address book or a [handy note] memo as it is common in a PDA terminal. Fig. 13 shows a [note displayed] display in the user terminal 2002. It [explains how life-related] displays regional lifestyle information [with regionality] at the new user location [can be registered. As the items of the life-related information] such as, an elementary school, pediatric, 15 internal medicine, a general hospital, taxi, and dining [are registered]. For each item, [specific] information [local] specific to the [user] new location is registered [as life-related information]. The underline indicates that it is an [html] HTML link. The user can access to a corresponding Web page by clicking the link.

**[0069]** According to the user terminal 2002 in this embodiment, since [life- 20 related] lifestyle information is extracted from the search history and a list of items of the [life-related] lifestyle information is generated, the user terminal 2002 can search [life-related] lifestyle information on each item in the Internet and register the searched information. Whenever the user changes

[the] his location, [life-related] lifestyle information corresponding to the new location is searched again and registered.

[0070] Some alterations are now explained. Although [life-related] personal or lifestyle information at the destination is searched based on the items of [life-related] information in the above-mentioned embodiments, personal attributes of the user, such as age, sex, preference, and hobbies may also be [registered beforehand] pre-registered and the [life-related] information may be searched based on these personal attributes. In this case, the user can obtain [life-related] lifestyle information fit to his/her personal [attributes,] preferences or interests by [just] simply entering the destination [in] of travel on business or on vacation. Therefore, for instance, the user can find a favorite restaurant before he/she travels, or find a nearby clinic when he/she goes on business.

[0071] In the above explanation, the user location and the destination are given by inputting an address or a postal code. If the user stays at the location or the destination, the current position data received from a GPS satellite or the current position data detected by a base station of a mobile phone or a PHS that the user has may be used as the position data of the user location or the destination.

[0072] Although the present invention has been described by way of exemplary embodiments, it should be understood that those skilled in the art

might make many changes and substitutions without departing from the spirit and [the] scope of the present invention that is defined by the appended claims.

## WHAT IS CLAIMED IS:

## 1. An information retrieval apparatus comprising:

an inputting unit which receives an input of a key word straightforwardly describing information to be searched by a user, and a place-name to apply a regional restriction to searching;

a selecting unit which selects a place-name of a region that is judged to be within a reachable area from a region indicated by the inputted place-name on the basis of a predefined judgment criterion;

a setting unit which sets a logical multiplication of a logical addition of the inputted place-name and the selected place-name, and the key word, as a query expression; and

a searching unit which searches the information by using the query expression.

## 2. An information retrieval apparatus comprising:

an inputting unit which receives a search term inputted by a user for searching information;

an extracting unit which extracts a place-name from the inputted search term;

a selecting unit which selects a place-name of a region that is judged to be within a reachable area from a region indicated by the extracted place-name on the basis of a predefined judgment criterion;



a setting unit which sets a query expression including a logical addition of the extracted place-name and the selected place-name; and

a searching unit which searches the information by using the query expression.

3. The apparatus of claim 1, wherein said selecting unit selects a place-name of a region within the reachable area by using a transfer means of the user as a determining factor.

4. The apparatus of claim 2, wherein said selecting unit selects a place-name of a region within the reachable area by using a transfer means of the user as a determining factor.

5. The apparatus of claim 1, further comprising a table which stores a place-name associated with absolute location information of a region indicated by the place-name, and wherein said selecting unit chooses from said table a place-name of a region from which the region indicated by the inputted place-name is far within a predefined distance, by using the absolute location information.

6. The apparatus of claim 2, further comprising a table which stores a place-name associated with absolute location information of a region indicated by the place-name, and wherein said selecting unit chooses from said table a place-name of a region from which the region indicated by the inputted place-name is far within a predefined distance, by using the absolute location information.

7. The apparatus of claim 2, further comprising a table which stores a proximity relation between regions indicated by place-names, and wherein said selecting unit chooses from said table a place name of a region that is in a high proximity to the region indicated by the inputted place-name, by using the proximity relation.

8. The apparatus of claim 2, further comprising a table which stores a inclusion relation between regions indicated by place-names, and wherein said selecting unit chooses from said table a place-name of a region that is included in the region indicated by the inputted place-name, by using the inclusion relation.

9. The apparatus of claim 2, wherein said inputting unit receives personal information of the user, and said selecting unit selects the place-name after modifying the reachable area using the personal information.

10. An information retrieval method comprising:
- providing an interface for a user to input a search term for searching information;
  - obtaining the search term inputted via the interface;
  - extracting a place-name from the search term;
  - selecting a place-name of a region that is judged to be within a reachable area from a region indicated by the place-name on the basis of a predefined judgment criterion;
  - setting a query expression including a logical addition of the extracted place-name and the selected place-name; and
  - searching the information by using the query expression.
11. An information retrieval method comprising:
- obtaining information related to a location of a user;
  - extracting an item of life-related information with regionality at the location from information retrieved by the user;
  - obtaining information related to a destination of the user; and
  - searching life-related information with regionality at the destination by using the extracted item.

12. An information retrieval method comprising:  
storing an item of life-related information with regionality;  
obtaining information related to a destination of a user; and  
searching life-related information with regionality at the destination by  
using the stored item without receiving an input of the item from the user.

13. The method of claim 11, further comprising inquiring of the user  
about a generic name corresponding to the item when the item of the life-  
related information is given as a specific name and the life-related information  
with regionality at the destination corresponding to the specific name is not  
found.

14. The method of claim 12, further comprising inquiring of the user  
about a generic name corresponding to the item when the item of the life-  
related information is given as a specific name and the life-related information  
with regionality at the destination corresponding to the specific name is not  
found.

15. The method of claim 11, further comprising providing the user with  
recommendable information chosen from the searched information when the  
item of the life-related information is given as a generic name.

16. The method of claim 12, further comprising providing the user with recommendable information chosen from the searched information when the item of the life-related information is given as a generic name.

17. An information retrieval method comprising:  
storing a personal attribute of a user;  
obtaining information related to a destination of the user; and  
searching life-related information with regionality at the destination by using the personal attribute without receiving a search item from the user.

18. An information retrieval apparatus comprising:  
a life-related information storing unit which stores an item of life-related information with regionality for each user;  
a destination obtaining unit which obtains information related to a destination of a user;  
a searching unit which searches life-related information with regionality at the destination by using the stored item; and  
a transmitting unit which transmits the searched life-related information to a terminal of the user.

19. The information retrieval apparatus, further comprising:

a search history storing unit which stores a history about information searched by the user;

a location obtaining unit which obtains information related to a location of the user; and

an extracting unit which extracts an item of life-related information with regionality at the location based on the history, and

wherein said life-related information storing unit stores the extracted item of the life-related information.

20. A terminal comprising:

a search history storing unit which stores a history about information searched by a user;

a location obtaining unit which obtains information related to a location of the user;

an extracting unit which extracts an item of life-related information with regionality at the location based on the history; and

a communication unit which transmits information related to a destination of the user and the extracted item to a server, and receives life-related information with regionality at the destination that is searched by the server.

**ABSTRACT OF THE DISCLOSURE**

An information retrieval apparatus that enables users to search regionally related information [with regionality] is provided. When a user inputs search terms for searching, a [place-name] place name is extracted from the search terms. Furthermore, the apparatus extracts another [place-name] place name of a region that is judged to be within a [reachable area from] reasonable search zone of the region indicated by the extracted [place-name] place name. Regional information is searched using the extracted [place-name] place name and the selected [place-name] place name. The user may search [life-related] for lifestyle information [with regionality at] regionally realted to his/her residence. The user [registers] may pre-register the items of the [life-related] lifestyle information [beforehand]. When the user moves to a new address, the apparatus searches [life-related] lifestyle information of the new address based on the registered items and presents the updated information to the user.

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